

Overview (1 of 2)

- Types of Assessments: Top-Down (T), Bottom-Up (B)
- Examples of Tools (for additional discussion, see handout)
 - T: Baseline Resilience Indicators for Communities (BRIC)
 - T: SoVI® – Social Vulnerability Index
 - T: Regional Capacity Index (RCI)
 - B: Coastal Resilience Index (CRI)
 - B: Maryland's CoastSmart Communities Report Card
 - B: Communities Advancing Resilience Toolkit (CART)
 - More... *only a snapshot of the many tools available, with more being developed daily*

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Overview (2 of 2)

- Data and Resources
 - Coastal Resilience Tool – The Nature Conservancy
 - Sea Level Rise Viewer – NOAA
 - Coastal Vulnerability Index – USGS
 - State of the Coast; NOAA Digital Coast - NOAA
- Discussion & Review

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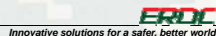
Assessments: Bottom-Up vs. Top-Down

Bottom-Up

- Community-Generated
- Utilize local knowledge, expert elicitation, anecdotal information
- Hazard-specific
- Intended for communities to identify vulnerabilities and build capacity
- Subjective - not transferrable

Top-Down

- Externally-Generated
- Utilize regional and national data
- Hazard-independent
- Intended to intercompare regions, address policy
- Objective, although data may be arbitrarily weighted in an index



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Examples: Top-Down (T) and Bottom-Up (B)

Top-Down



BRIC – Univ of South Carolina



ASCE's Infrastructure Report Card

Bottom-Up



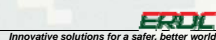
Sea Grant's Coastal Resilience Index



Maryland's CoastSmart Community Report Card



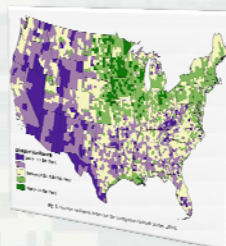
USACE's Resilience Matrix



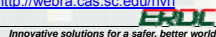
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T: Baseline Resilience Index for Communities (BRIC)

- Considers 6 categories using publically-available data: infrastructure, ecosystems, institutions; economic, social, and community capacity
- Hazard-independent
- Categories can be viewed independently or weighted and summed for an index; values will vary depending on spatial extent



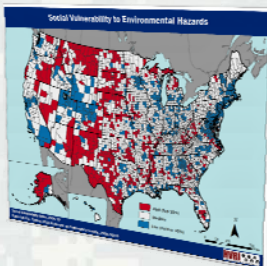
Hazards & Vulnerability Research Institute, University of South Carolina
<http://webra.cas.sc.edu/hvri>



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T: Social Vulnerability Index (SoVI®)

- Social vulnerability to environmental hazards
- County-level data
 - ▶ For policy makers and practitioners
 - ▶ Capacity for preparedness, response, and recovery from a disaster
- 29 socioeconomic variables; primarily US Census



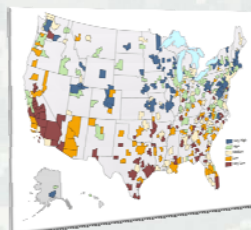
Hazards & Vulnerability Research Institute,
University of South Carolina
<http://webra.cas.sc.edu/hvri/products/sovi.aspx>

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T: Resilience Capacity Index (RCI) for Metropolitan Areas



University at Buffalo Regional Institute,
State University of New York
<http://brr.berkeley.edu/rci/data/ranking>

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- Single index based on 12 publically-available factors for 360 metropolitan areas
- Deviation from national metropolitan average provides relative score
 - ▶ Low standard deviation = low RCI; High dev= high RCI
- Hazard-independent

B: Coastal Resilience Index (Sea Grant)



- Self-assessment for community leaders
 - ▶ Facilitated by Sea Grant
- 8 pages, 6 sections (critical facilities and infrastructure, transportation issues, community plans and agreements, mitigation measures, business plans and social systems)
- Considers past & future storms
- Based on number of 'yes' answers, can calculate a Resilience Index

Mississippi – Alabama Sea Grant Consortium; Sempier et al. (2010)
<http://masgc.org/coastal-storms-program/resilience-index>

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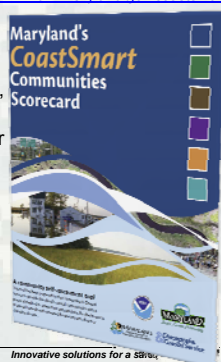
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B: Maryland's CoastSmart Community

Report Card: <http://www.dnr.maryland.gov/coastsmart>

- Community self-assessment
 - ▶ Local officials in group setting
 - ▶ Hazards: coastal storms, flooding, storm surge, and sea level rise
 - ▶ Facilitated by CoastSmart planner
 - ▶ Not used for comparison/ranking of communities
 - ▶ Rating based on yes answers
- Facilitates awareness of
 - ▶ Strengths & weaknesses
 - ▶ Vulnerabilities & risks
 - ▶ Next steps to increase resilience



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B: Communities Advancing Resilience Toolkit (CART)



- Community surveys, group meetings, strategy development & implementation
 - ▶ Connection and caring (support systems, equity, diversity)
 - ▶ Resources (natural, physical, financial, human, social)
 - ▶ Potential for transformation (data, assets, skills)
- Not intended to intercompare or rank communities

University of Missouri, Terrorism and Disaster Center, National Child Traumatic Stress Network <http://www.oumedicine.com/psychiatry/research/terrorism-and-disaster-center/interventions/community-resilience-cr/>

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Data and Resources

- Need information to help assess **preparedness** and ability to **absorb** impact, **recover**, and **adapt**



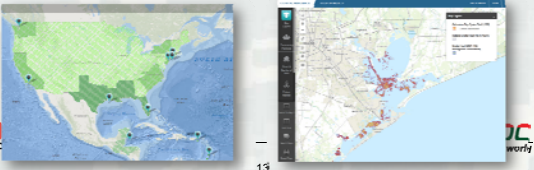
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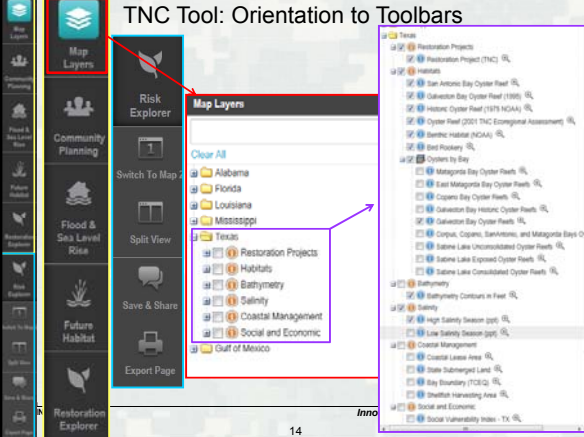
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Coastal Resilience Tool – The Nature Conservancy <http://coastalresilience.org/>

- Online geoportal with natural resource, storm and related process data; selected locations (see map lower left)
 - Oyster restoration, habitat, species, bathymetry, salinity, management, social, economic, and built infrastructure information – a “must” to explore for your region!
 - Only a portion of the Tool's resources are discussed herein
 - We will use part of the Tool during the breakout
 - Note: Terminology may differ from definitions herein



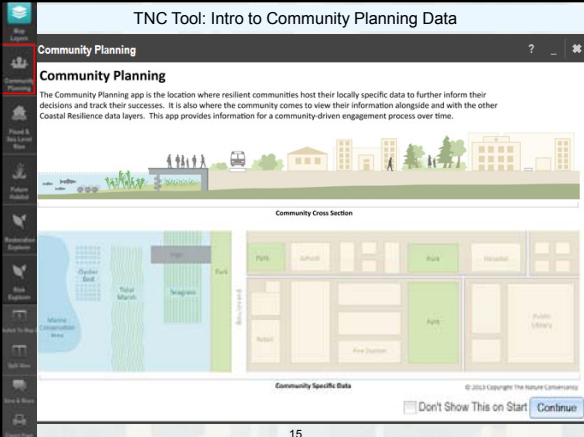
TNC Tool: Orientation to Toolbars

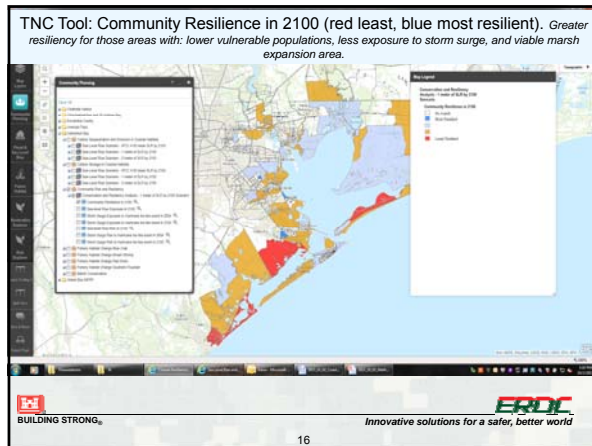


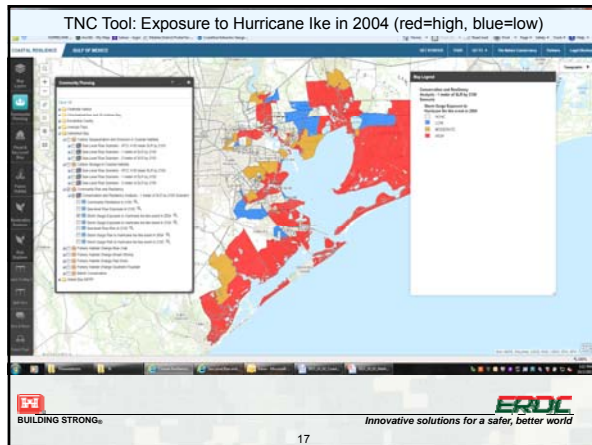
TNC Tool: Intro to Community Planning Data

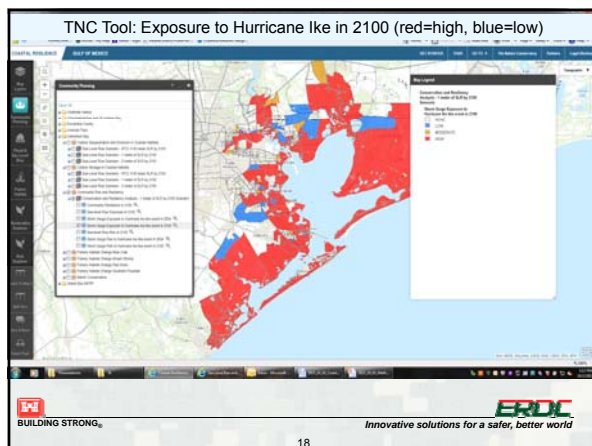
Community Planning

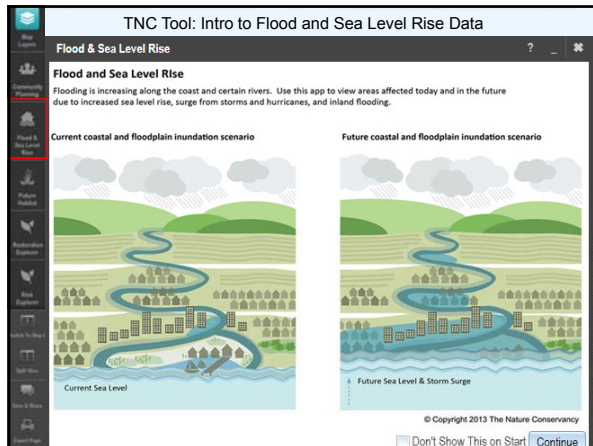
The Community Planning app is the location where resilient communities host their locally specific data to further inform their decisions and track their successes. It is also where the community comes to view their information alongside and with the other Coastal Resilience data layers. This app provides information for a community-driven engagement process over time.

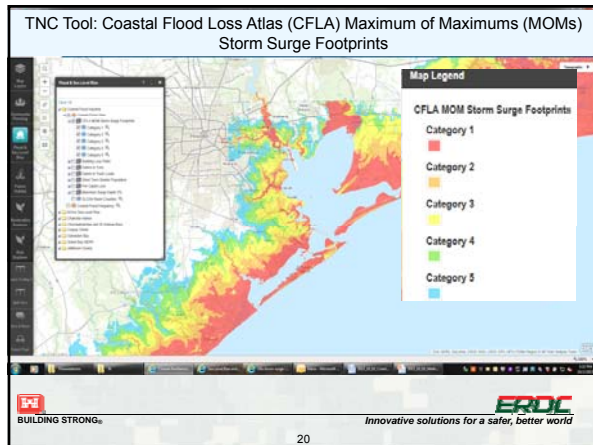


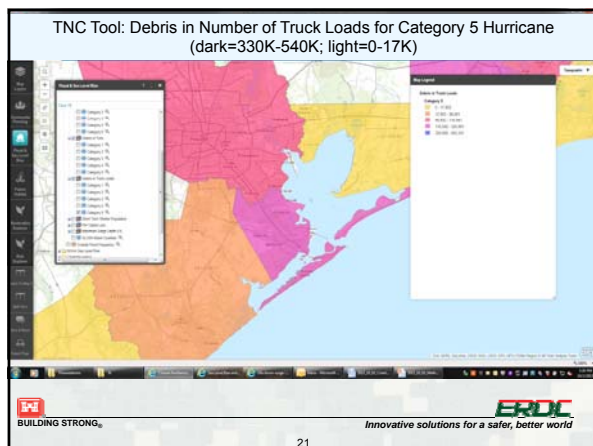


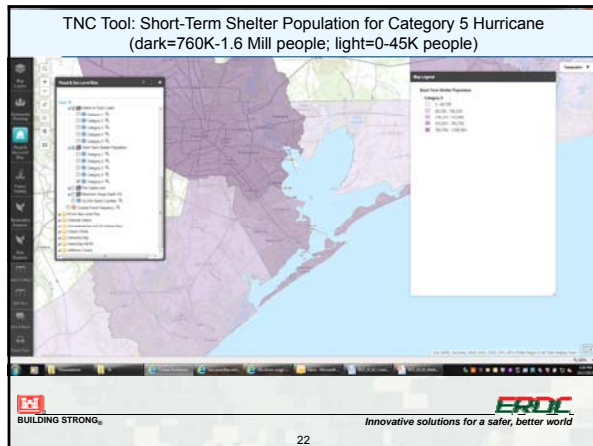


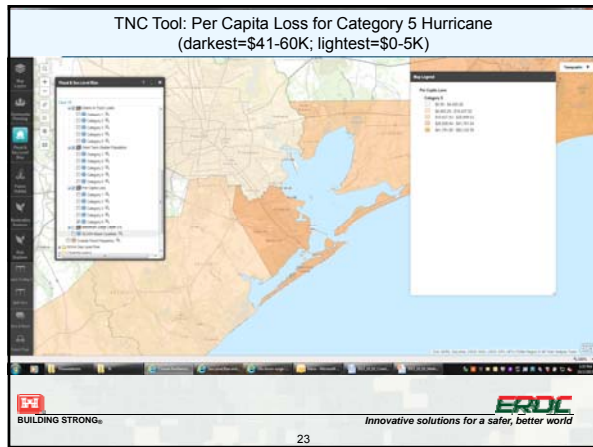


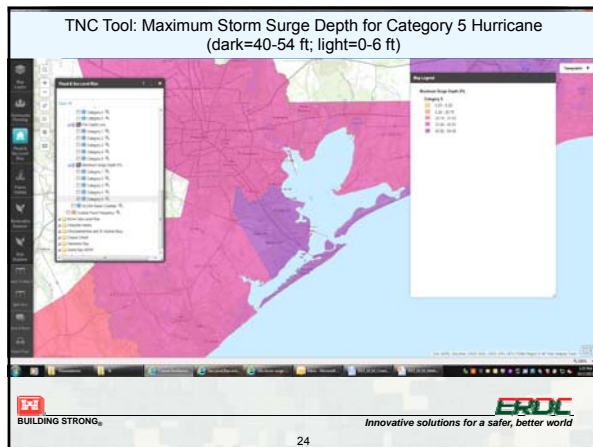








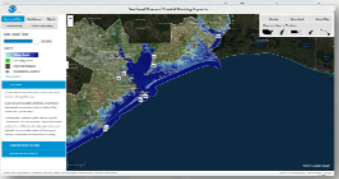




Sea Level Rise Viewer – NOAA

<http://coast.noaa.gov/slr/>


- Online geoportal with slider bar to visualize change in total water level, from present MHHW to +6-ft, not accounting for erosion, subsidence, and future construction
- Also provided:
 - Confidence ranges for SLR estimates, marsh locations, vulnerability ratings, and flooding frequency
- Some of these data are in the TNC tool



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NOAA SLR Viewer: Present Mean Higher High Water (MHHW)



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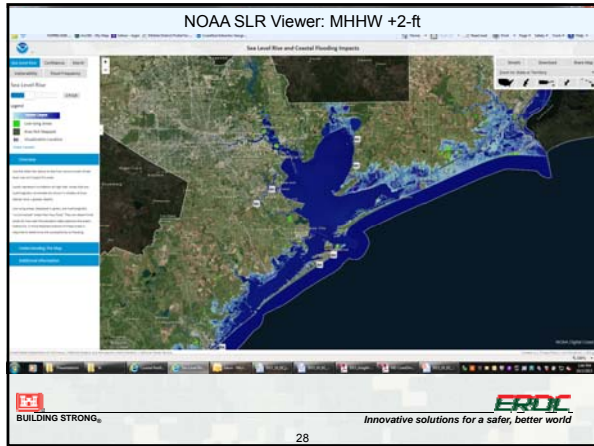
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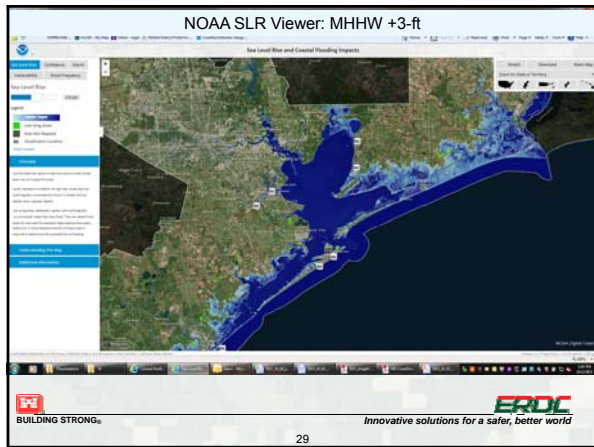
NOAA SLR Viewer: MHHW +1-ft

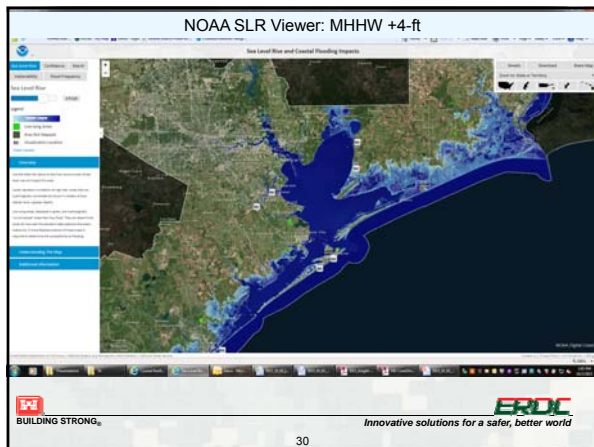


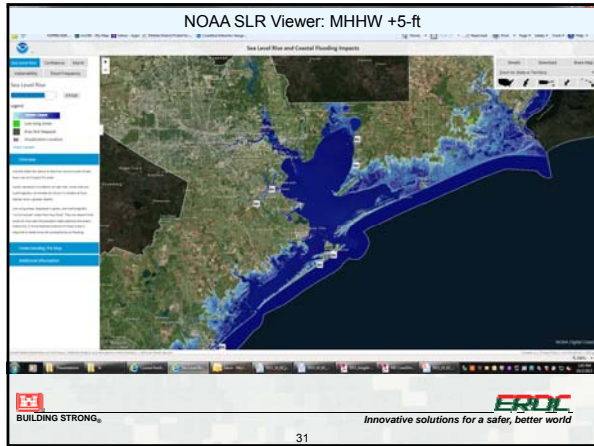
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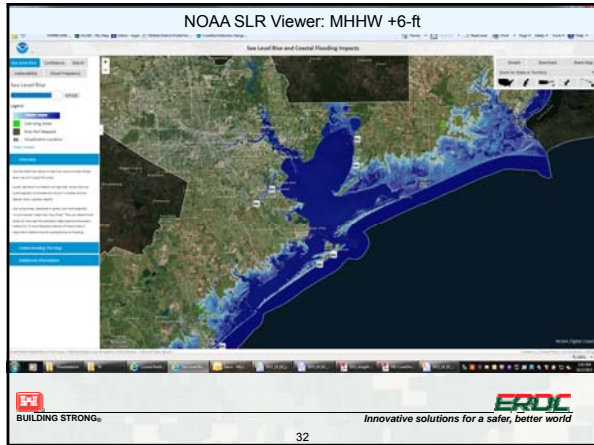
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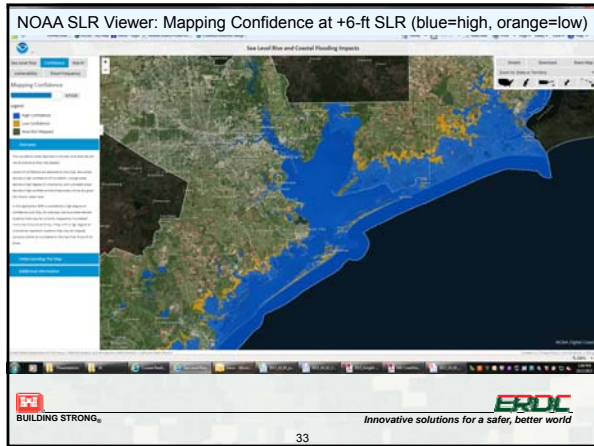


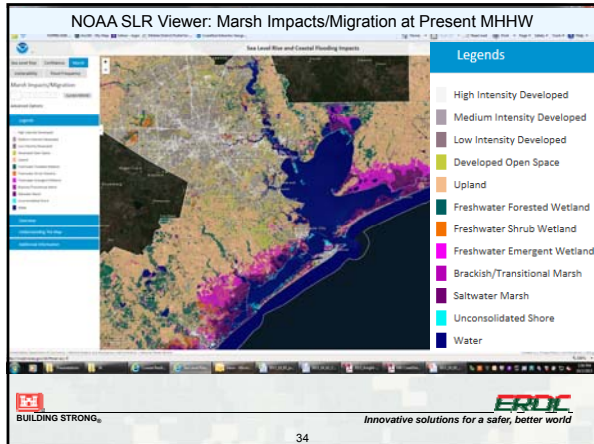


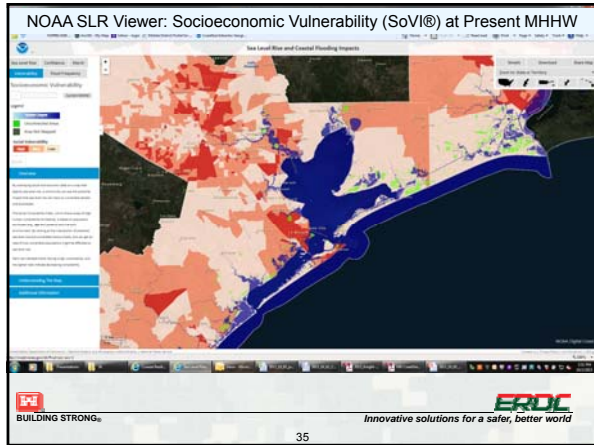


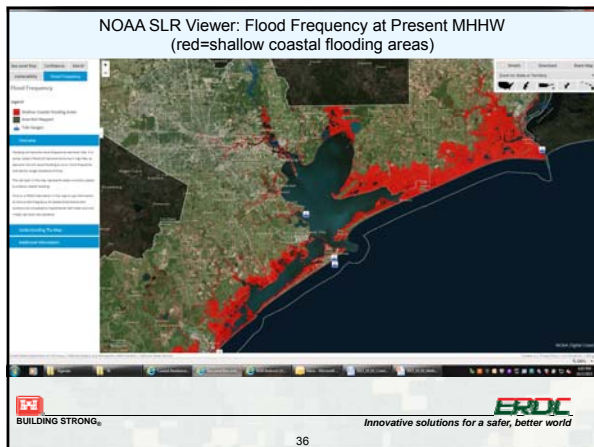












Coastal Vulnerability Index (CVI) – USGS

<http://woodshole.er.usgs.gov/project-pages/cvi/images/largenat.jpg>

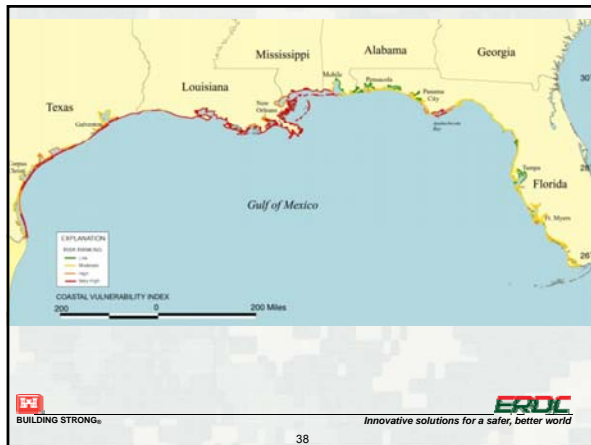
- Risk that physical changes will occur as sea level rises
- Criteria: tidal range, wave height, coastal slope, shoreline change, geomorphology, and historical rate of relative sea level rise
- Calculated as the root-mean-square of the ranked variables



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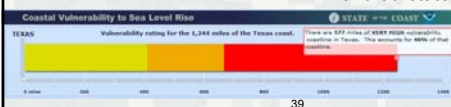
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State of the Coast - NOAA

<http://stateofthecoast.noaa.gov/vulnerability/welcome.html>



- Uses CVI data:
 - Erosion rate, geomorphology, historic sea level rise, regional coastal slope, wave height, and tidal range
- Summary for entire US
- Selecting a state will provide individual state rankings; hovering over toolbar (below) provides statistics for that state



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Closing Remarks; Discussion

- Many assessment tools and a lot of data are available
 - ▶ More are being developed regularly
 - ▶ Worthwhile to explore new tools and data when starting new study
- Many of the Top-Down tools are not hazard-specific, but results are comparable between regions
 - ▶ Be aware that aggregation of data sets may mask vulnerabilities
 - ▶ Typically utilize data that are not easily changed (e.g., median income, % older/vulnerable population, number of roadways, etc.)
- Most of the Bottom-Up tools are qualitative and not transferrable
 - ▶ Beneficial for coming to common understanding, identifying vulnerabilities and developing actionable decisions
- Advancements are needed in tool development
- Data documenting recovery and the potential for adaptation are lacking

